

(3) DOCUMENT-IDENTIFIER: US 5690618 A

TITLE: Electronic syringe

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BSPR:

The present invention relates to an electronic syringe, and more particularly to a compact, pen-style grip, electronic syringe that allows a practitioner to administer injections or aspirations at a controlled rate and with a precise degree of hand control thereby minimizing or eliminating patient fear and discomfort.

BSPR:

Electronic syringes are known in the art. Typical uses for such devices include injecting biocompatible material, specifically anaesthetic such as block, conduction and para-apical anaesthesia, through bone tissue and administering insulin and other pharmaceuticals.

BSPR:

Thus, the present invention relates to an electronic syringe. As used throughout this specification the term "electronic syringe" has a

broad meaning and is intended to encompass a device used for injection or aspiration, as warranted by the intended application.

DEPR:

It is contemplated that the materials and means described above may be substituted without departing from the spirit and scope of the invention. For example, although the above-described drive system employed an electric lead screw device, it is contemplated that pneumatic cylinders, solenoid, electromagnetic or hydraulic actuators could also be employed. Also, the electronic control means may be any suitable device including an application specific integrated circuit (ASIC) or a micro controller. It is also contemplated that a reset switch would be provided on syringe 10 to enable the practitioner to reverse the injection procedure at any time. It is further contemplated that the present electronic syringe is also suitable for aspiration of various body fluids such as bone marrow, blood, excess joint fluids and the like. In this case drive system 42 could be provided with a sliding feature and a plunger engagement means which would allow an empty ampoule to be filled with any of the above-identified fluids.

CLPR:

9. An electronic **syringe** according to claim 8, wherein said lead screw and said lead nut in combination provide a backlash, said backlash providing self **aspiration** of said ampoule.